

THE CITY OF BONNERS FERRY (PWSNO 1110003) SOURCE WATER ASSESSMENT REPORT

November 11, 2000



State of Idaho Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the watershed characteristics.

This report, *Source Water Assessment for the City of Bonners Ferry, Idaho*, describes the public drinking water system, the zone boundary of water contribution, and the associated potential contaminant sources located within this boundary. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The City of Bonners Ferry's drinking water is supplied from Myrtle Creek with an emergency backup intake in the Kootenai River. Turbidity associated with heavy storm water runoff is the greatest threat to water quality. Radionuclides in concentrations below the maximum contaminant Level (MCL) have been detected in the water since 1979. Nitrate (MCL = 10.0 mg/l) at a concentration of 0.055 mg/l was detected in 1988 and 1992. It has not been detected since. Water quality in the Kootenai River has been threatened by train derailments in the tributary Moyie River watershed.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Source water protection activities for the City of Bonners Ferry should focus on preventing sediment flow into Myrtle Creek from roads, logging or other activity in the watershed, and should include periodic inspections of the watershed to monitor any land use changes. Due to the fairly short time associated with the movement of surface waters, source water protection activities should be aimed at both short-term and long-term management strategies to counter any future contamination threats. Source water protection activities should continue to be coordinated with the U.S. Forest Service and private landowners in the watershed.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact your regional IDEQ office or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR BONNERS FERRY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted.

It is important to review this information to understand what the ranking of this source means. A map showing the delineated source water assessment area, a map showing the entire watershed contributing to the delineated area, a map showing the twenty-four (24) hour emergency response delineation, and the inventory of significant potential sources of contamination identified within the delineated area are included. Significant potential contaminant sources found in the delineation are listed and the worksheet used to develop the assessment also is attached.

Background

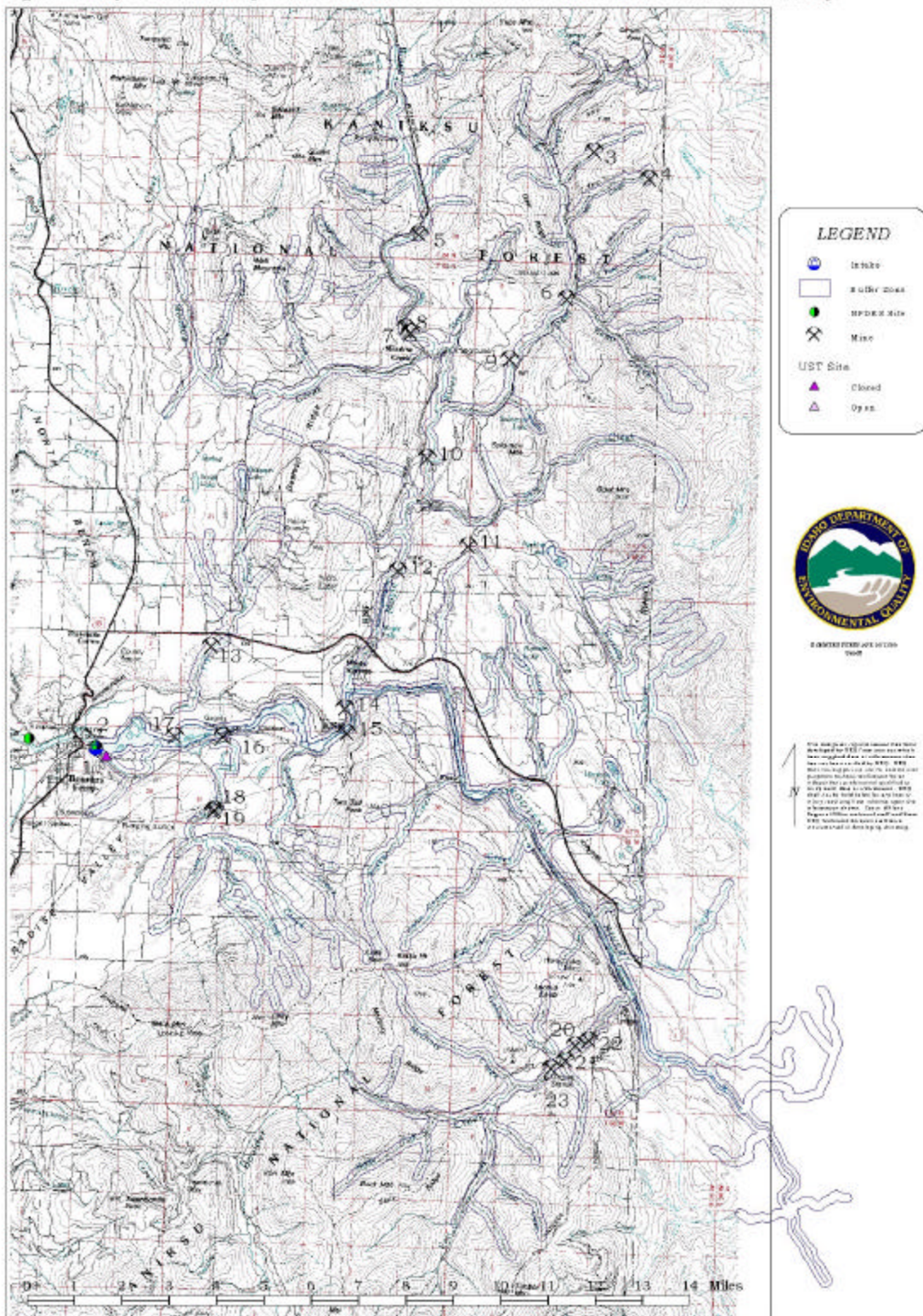
Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the intakes and watershed characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, time and resources to accomplish the assessments are limited. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply. The Idaho Department of Environmental Quality (IDEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. IDEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. City of Bonners Ferry, Kootenai River Intake Delineation and Potential Contaminant Inventory.



Section 2. Conducting the Assessment

General Description of the Source Water Quality

Bonnors Ferry, Idaho is a community of approximately 2200 people, located on the Kootenai River in Boundary County (Figure 1). Public drinking water for Bonners Ferry comes from a concrete diversion dam with a screened inlet on Myrtle Creek, and from an emergency backup intake in the Kootenai River. Water from both sources is piped to a central plant for treatment and distribution

The primary water quality issue currently facing Bonners Ferry is that of preventing contamination associated with sediment from land disturbances in the 23,000-acre Myrtle Creek watershed.

Defining the Zones of Contribution--Delineation

To protect surface water systems from potential contaminants, the EPA required that the entire drainage basin be delineated upstream from the intake to the hydrologic boundary of the drainage basin (U.S. EPA, 1997b). The EPA recognized that an intake on a large water body could have an extensive drainage basin. Therefore, the EPA recommended that large drainage basins be segmented into smaller areas for the purpose of implementing a cost-effective potential contaminant inventory and susceptibility analysis. The delineation process established the physical area around an intake that became the focal point of the assessment. Because the watershed for the Myrtle Creek intake is relatively small, the delineation was not subdivided (Figure 2). The delineation extends to the watershed boundaries as they appear on a 7.5-minute USGS topographic map.

The process for the Kootenai River intake included mapping 500-foot buffer zones along the river and tributary streams that extend upstream 25 miles from the intake or to the 4-hour streamflow time-of-travel boundary, whichever is greater. This 4-hour streamflow is calculated from the 10-year flood event. River or stream buffer zones also extend up tributaries to the remainder of the 25-mile boundary, or the 4-hour streamflow time-of-travel boundary, whichever is greater (Figure 1).

In addition to the source water delineation, IDEQ has calculated 24-hour emergency response distances to facilitate emergency-response activities. If a potential contaminant spills directly into a water body, the drinking water utility needs appropriate notification in order to turn off an intake, or switch to an alternative source. For the Kootenai river intake, the upstream emergency response distances were calculated using average annual streamflow data from the USGS gauging stations on the Kootenai and Moyie Rivers in Idaho and the Yaak River, a tributary of the Kootenai River in Montana. In addition to the 24 hour emergency response delineation, the Kootenai River Basin map shows the watershed boundary, locations of highways, railroads, Superfund sites (CERCLIS), and National Pollutant Discharge Elimination System (NPDES) facilities which could pose a threat to the source water intake (Figure 3). The actual data used by IDEQ in determining the source water assessment delineation area are available upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources.

The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by IDEQ and from available databases.

The dominant land use in the Myrtle Creek drainage is undeveloped forest. About 80 percent of the drainage is publicly owned and is administered by the U.S. Forest Service. Less than one percent of the area is state owned. The rest is privately owned. The drainage is about 5.5 miles west of Bonners Ferry in the Selkirk Mountains. Access in the watershed is limited because it is grizzly bear habitat.

The portion of the Kootenai River Basin that lies in Idaho is mostly forested with some agricultural land in the floodplain. Tributary drainages such as Boulder, Skin and Deer Creeks and the Moyie River were extensively prospected, and are dotted with abandoned mines. A major rail link follows the Moyie River from East Port to.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during December of 1998. It involved identifying and documenting potential contaminant sources within the Bonners Ferry Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by IDEQ.

A total of two potential contaminant sites, a mine and a borrow pit, are located within the Myrtle Creek watershed (see Table 1 and Figure 2). 23 potential contaminant sources were identified in the 500-foot buffer zone along the Kootenai River and its tributaries. They include 21 mining sites, a closed underground storage tank and the City of Bonners Ferry water treatment plant (Table 1 and Figure 1). An additional 18 sites were identified in the Kootenai River watershed but outside the buffer zone (Table 2 and Figure 3). The presence of these major potential contaminant sites in the Kootenai River watershed was factored into the susceptibility analysis for the intake.

Table 1. Bonners Ferry Potential Contaminant Inventory

MAPID Myrtle Creek	Site Description	Source of Information	Potential Contaminants
1	MINE	MINE DATABASE	Sediment
2	GRAVEL PIT	MINE DATABASE	Sediment
MAPID Kootenai River	Site Description	Source of Information	Potential Contaminants
1	UST SITE	UST DATABASE	VOC
2	NPDES SITE	NPDES DATABASE	H2O TREATMENT discharge
3	MINE	MINE DATABASE	Gold, IOC
4	MINE	MINE DATABASE	Gold, IOC
5	PROSPECT	MINE DATABASE	Silver, IOC
6	BORROW PIT	MINE DATABASE	Sediment
7	PROSPECT	MINE DATABASE	Gold, IOC
8	BORROW PIT	MINE DATABASE	Sediment
9	BORROW PIT	MINE DATABASE	Sediment
10	PLACER	MINE DATABASE	Gold, IOC
11	BORROW PIT	MINE DATABASE	Sediment
12	MINE	MINE DATABASE	Gold, IOC
13	GRAVEL PITS	MINE DATABASE	Sediment
14	MINE	MINE DATABASE	Copper, IOC
15	QUARRY	MINE DATABASE	Sediment
16	BORROW PIT	MINE DATABASE	Sediment
17	GRAVEL PIT	MINE DATABASE	Sediment
18	BORROW PIT	MINE DATABASE	Sediment
19	MINE	MINE DATABASE	Sediment
20	MINE	MINE DATABASE	Silver, IOC(
21	MINE	MINE DATABASE	Lead, IOC
22	MINE	MINE DATABASE	Gold, IOC
23	MINE PLACERS	MINE DATABASE	Gold, IOC

Table 2. Kootenai River Basin Potential Contaminant Inventory

Basin Map ID	Site Description	Potential Contaminant	Source of Information
C 1	Ground Water Contamination	SOC, VOC	CERCLA Database
N 1	Storm Water - Industrial	SOC, VOC	NPDES Database
N 2	Facultative Sewage Lagoon	MICROBIAL	NPDES Database
N 3	Storm Water - Industrial	SOC, VOC	NPDES Database
N 4	Storm Water - Industrial	SOC, VOC	NPDES Database
N 5	Water Treatment Plant	PARTICULATE	NPDES Database
N 6	Storm Water - Industrial	SOC, VOC	NPDES Database
N 7	Wastewater Treatment Plant	MICROBIAL	NPDES Database
N 8	Wastewater Treatment Plant	MICROBIAL	NPDES Database
N 9	Wastewater Treatment Plant	MICROBIAL	NPDES Database
N 10	Scrubber Water Effluent	PARTICULATE, SOC, VOC	NPDES Database
N 11	Bio. System Effluent	MICROBIAL	NPDES Database
N 12	Water Treatment Plant	PARTICULATE	NPDES Database

Basin Map ID	Site Description	Potential Contaminant	Source of Information
N 13	Log Pond Effluent	SOC, VOC	NPDES Database
N 14	Storm Water - Mining, Oil and Gas	SOC, VOC	NPDES Database
N 15	Pipe To Libby Creek	SOC, VOC	NPDES Database
N 16	Ground Water Infiltration	SOC, VOC	NPDES Database
N 17	Percolation Pond	SOC, VOC	NPDES Database

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 2. City of Bonners Ferry. Myrtle Creek Delineation and Potential Contaminant Inventory.

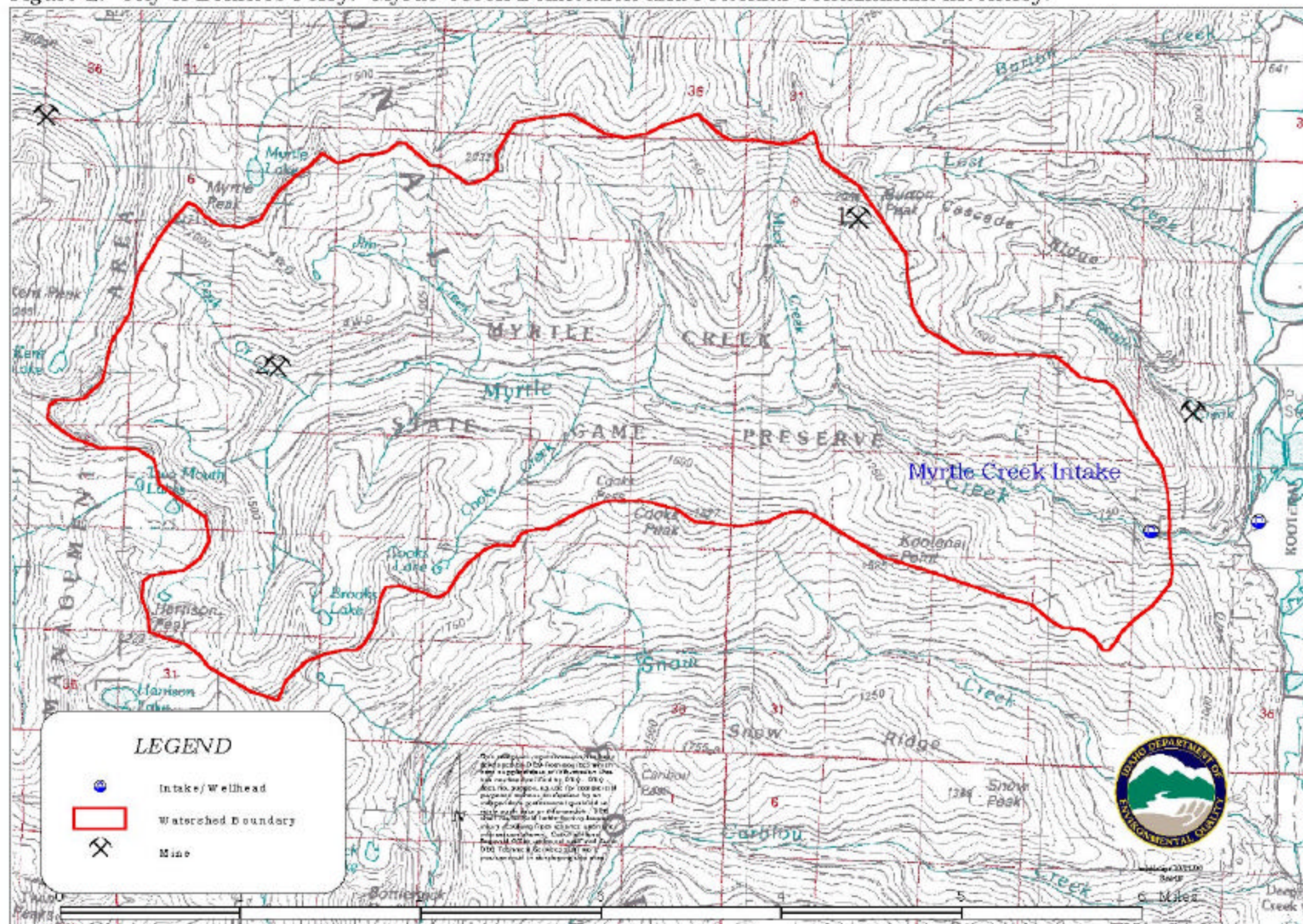
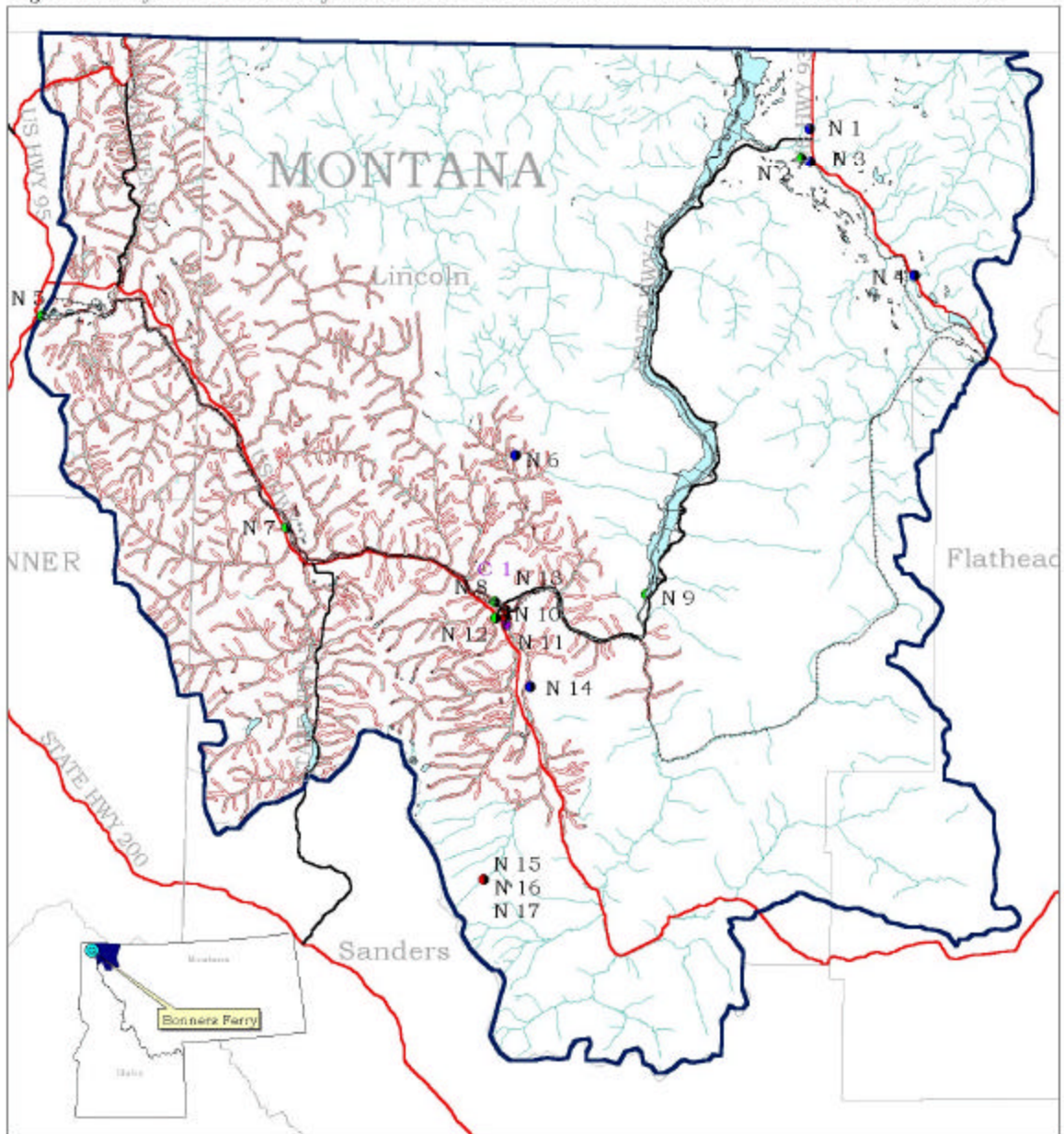


Figure 3. City of Bonners Ferry. Location of Potential Contaminants in Kootenai River Watershed.



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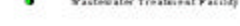
This map was prepared for the City of Bonners Ferry, Idaho, by the Idaho Department of Environmental Quality. The map shows the location of potential contaminants in the Kootenai River Watershed. The map is not to scale and is for informational purposes only. The map is not to be used for any other purpose without the written consent of the Idaho Department of Environmental Quality.



LEGEND



MPDES



Section 3. Susceptibility Analyses

Significant potential sources of contamination were ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity and construction of the intake, land use characteristic, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants.

The relative ranking that is derived for each intake is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Intake Construction

The construction of the Bonners Ferry public water system intakes directly affects the ability of the intakes to protect the water supply from contaminants. The Bonners Ferry drinking water system consists of two intakes that produce surface water for domestic and industrial uses. The intakes in the Bonners Ferry system are a concrete diversion dam with a screened inlet in Myrtle Creek, located above the Kootenai Wildlife Refuge, and a screened intake in about 15 feet of water on the south side of the Kootenai River below the filter plant. Water from both sources is treated, monitored and distributed from a central filtration plant. Intake system construction scores, based on DEQ sanitary surveys, were moderate.

Potential Contaminant Source and Land Use

Both intakes rated in the low susceptibility category for the inorganic chemical class, for volatile organic chemicals, and for synthetic organic chemicals.

In terms of the total susceptibility score, it can be seen from Table 2 that both of the intakes showed a low susceptibility to microbial contamination, which is generally related to storm water runoff and agricultural grazing impacts.

Table 3. Summary of City of Bonners Ferry Susceptibility Evaluation

Intake	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Myrtle Creek	L	L	L	L	M	L	L	L	L
Kootenai River	L	L	L	L	M	L	L	L	L

H = High Susceptibility, M = Moderate Susceptibility, Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H* - Indicates source automatically scored as high susceptibility due to presence of either a VOC, SOC or an IOC above the Maximum Contaminant Level in the finished drinking water or the presence of significant contaminant sources within 1000 feet of the intake in the delineated area.

Susceptibility Summary

The Bonners Ferry drinking water system is currently most threatened by sediment in runoff accompanying unusual rain and snow melt conditions in the Myrtle Creek drainage. The Kootenai River intake is vulnerable to contaminants entering the river and its tributaries as a result of highway and railroad accidents.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For Bonners Ferry source water protection activities should focus on implementation of best management practices aimed at reducing sediment runoff from timber harvest, road building or recreational activity in the Myrtle Creek drainage. Since the land in the watershed is not owned by Bonners Ferry, partnerships with private landowners, federal, state and county agencies to regulate land use in the watershed should be fostered. Due to the relatively short time involved with the movement of surface water, source water protection activities should be aimed at short-term management strategies, and at the same time need to address long-term impacts from logging and other land disturbances in the watershed.

The City of Bonners Ferry should inform officials with the railroad; the Idaho Department of Transportation; Lincoln County, Montana and the Montana Highways Department that spills along those transportation corridors potentially affect the domestic water intake in the Kootenai River. The city needs an early warning when accidents such as the recent railroad derailments near Eastport and Kriest Creek occur.

Assistance

Public water supplies and others may call the following IDEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the IDEQ office for preliminary review and comments.

Coeur d'Alene Regional IDEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

Website: <http://www.deq.state.id.us>

References Cited

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Division of Environmental Quality, 1994. Ground Water and Soils Reconnaissance of the Lower Payette Area, Payette County, Idaho. Ground Water Quality Technical Report No. 5. Idaho Division of Environmental Quality. December 1994.

EPA (U.S. Environmental Protection Agency), 1997, State Methods for Delineating Source Water Protection Areas for Surface Water Supplied Sources of Drinking Water, EPA 816-R-97-008, 40p.

U.S. Government Printing Office, 1995, Code of Federal Regulations, 40 CFR 112, Appendix C-III, Calculation of the Planning Distance

Attachment A

City of Bonners Ferry Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined from the addition of the Potential Contaminant Source/Land Use Score and Source Construction Score.

Final Susceptibility Scoring:

0 - 7 Low Susceptibility

8 - 15 Moderate Susceptibility

> 16 High Susceptibility

Surface Water Susceptibility

Report

Public Water System Name :

Source **KOOTENAI RIVER**

Public Water System Number :

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1. System Construction

SCORE

Intake structure properly constructed	YES	0
Infiltration gallery or well under the direct influence of Surface Water	NO	2

Total System Construction Score **2**

2. Potential Contaminant Source / Land Use

IOC Score VOC Score SOC Score Microbial Score

Predominant land use type (land use or cover)	BASALT FLOW, UNDEVELOPED, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
Significant contaminant sources *	NO				
Sources of class II or III contaminants or microbials		0	0	0	0
Agricultural lands within 500 feet	YES				
	Less than 25% Irrigated Agriculture	0	0	0	0
Three or more contaminant sources	YES	1	1	1	1
Sources of turbidity in the watershed	YES	1	1	1	1

Total Potential Contaminant Source / Land Use Score **2 2 2 2**

3. Final Susceptibility Source Score **4 4 4 4**

4. Final Source Ranking **Low Low Low Low**

* Special consideration due to significant contaminant

The source water has no special susceptibility

Surface Water Susceptibility**Report**

Public Water System Name :

BONNERS FERRY CITY OFSource: **MYRTLE CK**

Public Water System Number :

11/8/00 12:14:07 PM

1. System Construction		SCORE			
Intake structure properly constructed	YES	0			
Infiltration gallery or well under direct influence of surface water	NO	2			
Total System Construction Score		2			
2. Potential Contaminant Source / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score
Predominant land use type (land use or cover)	BASALT FLOW, UNDEVELOPED, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	0	
Significant contaminant sources *	NO				
Sources of class II or III contaminants or microbials		0	0	0	0
Agricultural lands within 500 feet	NO				
		0	0	0	0
Three or more contaminant sources	NO	0	0	0	0
Sources of turbidity in the watershed	YES	1	1	1	1
Total Potential Contaminant Source / Land Use Score		1	1	1	1
3. Final Susceptibility Source Score		3	3	3	3
4. Final Source Ranking		Low	Low	Low	Low

* Special consideration due to significant contaminant

The source water has no special susceptibility

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as **Superfund** is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.